

WHAT IS CLAIMED IS:

1           1.    A job processing system comprising a terminal  
2   equipment for issuing a job request by handling a plurality of  
3   documents as one job, and a job scheduling device which  
4   sequentially processes jobs by storing the jobs, received from  
5   the terminal equipment through a network, in a queue and  
6   sending a job execution section a processing request relating  
7   to a document specified by the job stored in the queue,

8                said terminal equipment comprising:

9                attribute information adding means for adding  
10   information which specifies a job output method to a job  
11   request as attribute information of the job, and

12               said job scheduling device comprising:

13               attribute information setting means for acquiring  
14   attribute information included in the received job and sets the  
15   attribute information to information which specifies a job and  
16   a document;

17               a queue for storing, as a job, a group of items of the  
18   information which specify a job and a document; and

19               output result control means which, upon reference to  
20   the information items which specify a job and a document with  
21   respect to the job stored in the queue, controls the processing  
22   request issued to the job execution section in such a way that  
23   a specified number of copies of the job are output using the  
24   information which specifies a job output method.

1           2.     A job processing system comprising a terminal  
2 equipment for issuing a job request by handling a plurality of  
3 documents as one job, and a job scheduling device which  
4 sequentially processes jobs by storing the jobs, received from  
5 the terminal equipment through a network, in a queue and  
6 sending a job execution section a processing request relating  
7 to a document specified by the job stored in the queue,

8                 said terminal equipment comprising:

9                 attribute information adding means for adding  
10 information relating to the number of copies of the job and  
11 information relating to a job output result to the job request  
12 as job attribute information, and

13                said job scheduling device comprising:

14                attribute information setting means for acquiring  
15 attribute information included in the received job and sets the  
16 attribute information to information which specifies a job and  
17 a document;

18                a queue for storing, as a job, a group of items of the  
19 information for specifying a job and a document; and

20                output result control means which, upon reference to  
21 the information for specifying a job and a document with  
22 respect to the job stored in the queue, controls the processing  
23 request issued to the job execution section in such a way that  
24 a specified number of copies of the job are only output in a  
25 collated manner if collation processing is specified in the  
26 information relating to a job output result using the

27 information which specifies a job and a document, or in such a  
28 way that a specified number of copies of the job are only  
29 output in an uncollated manner if uncollation processing is  
30 specified in the information relating to the job output result  
31 using the information which specifies a job and a document.

1 ~~3. A job processing system comprising a terminal~~  
2 ~~equipment for issuing a processing request by handling a~~  
3 ~~plurality of documents as one job, a job execution section for~~  
4 ~~printing the documents, and a job scheduling device which~~  
5 ~~accepts a document input from the terminal equipment through a~~  
6 ~~network and issues a processing request relating to that~~  
7 ~~document to the job execution section,~~

8 said terminal equipment comprising:

9 control information specifying means for specifying a  
10 processing start wait for a leading document among the  
11 plurality of documents, and

12 said job scheduling device comprising:

13 preparation means for preparing information which  
14 specifies a received document;

15 queuing means for storing the prepared  
16 information which specifies the document by associating the  
17 information on a job-by-job basis;

18 control information setting means which, if a  
19 processing start wait is specified for the leading document  
20 among a plurality of received documents, sets the processing

21 ~~start wait to information for specifying this leading document;~~

22 and

23 control state setting means which, if the processing  
24 start wait is set to information which specifies the leading  
25 document of the job stored in said queuing means, renders that  
26 job in a processing start wait state,

27 wherein said job scheduling device sequentially  
28 retrieves jobs stored in said queuing means when the job  
29 execution section becomes enabled to accept processing, issues  
30 a processing request for a corresponding document when there is  
31 information specifying a document to which a processing request  
32 can be issued, and when a job is placed in the processing start  
33 wait state, prevents the issue of processing requests with  
34 respect to a document for that job and documents for subsequent  
35 jobs until that job is released from the processing start wait  
36 state by a user's instruction or a timeout.

1 4. A job processing system comprising a terminal  
2 equipment for issuing a processing request by handling a  
3 plurality of documents as one job, a job execution section for  
4 printing the documents, and a job scheduling device which  
5 accepts a document input from the terminal equipment through a  
6 network and issues a processing request relating to that  
7 document to the job execution section,

8 said terminal equipment comprising:

9           control information specifying means for specifying a  
10 processing completion wait for a leading document among the  
11 plurality of documents, and  
12           said job scheduling device comprising:  
13           preparation means for preparing information which  
14 specifies a received document;  
15           queuing means for storing the prepared information  
16 which specifies the document by associating the information on  
17 a job-by-job basis;  
18           control information setting means which, if a  
19 processing completion wait is specified for the leading  
20 document among a plurality of received documents, sets the  
21 processing completion wait to information for specifying this  
22 leading document; and  
23           control state setting means which, if the processing  
24 completion wait is set to information which specifies the  
25 leading document of the job stored in said queuing means,  
26 renders that job in a processing completion wait state,  
27           wherein said job scheduling device sequentially  
28 retrieves jobs stored in said queuing means when the job  
29 execution section becomes enabled to accept processing, issues  
30 a processing request for a corresponding document when there is  
31 information specifying a document to which a processing request  
32 can be issued, and when a job is placed in the processing  
33 completion wait state, prevents the issue of processing  
34 requests with respect to a document for that job and documents

35 ~~for subsequent jobs until that job is released from the~~  
36 ~~processing completion wait state by a user's instruction or a~~  
37 ~~timeout.~~

1 5. A job processing system comprising a terminal  
2 equipment for issuing a processing request by handling a  
3 plurality of documents as one job, a job execution section for  
4 printing the documents, and a job scheduling device which  
5 accepts a document input from the terminal equipment through a  
6 network and issues a processing request relating to that  
7 document to the job execution section,

8 said terminal equipment comprising:  
9 control information setting means for specifying a  
10 password input wait for a leading document among the plurality  
11 of documents, and

12 said job scheduling device comprising:  
13 preparation means for preparing information which  
14 specifies a received document;

15 queuing means for storing the information which  
16 specifies the document by associating the information on a job-  
17 by-job basis;

18 control information setting means which, if a password  
19 input wait is set for the leading document among a plurality of  
20 received documents, sets the password input wait to information  
21 which specifies that leading document; and

22 ~~control state setting means which, if the password~~  
23 input wait state is set to information which specifies the  
24 leading document of the job stored in the queuing means,  
25 renders that job in a password input wait state,

26 wherein said job scheduling device sequentially  
27 retrieves jobs stored in said queuing means when the job  
28 execution section becomes enabled to accept processing, issues  
29 a processing request for a corresponding document when there is  
30 information specifying a document to which a processing request  
31 can be issued, and when a job is placed in the password input  
32 wait state, prevents the issue of processing requests with  
33 respect to a document of that job and documents of subsequent  
34 jobs until that job is released from the password input wait  
35 state by a user's instruction or a timeout.

1 6. A job processing system comprising a terminal  
2 equipment for issuing a processing request, and a job  
3 scheduling device which sequentially processes jobs by storing  
4 the jobs received from the terminal equipment in a queue and  
5 issuing a processing request, relating to a document specified  
6 by the job stored in the queue, to a job execution section,

7 said terminal equipment comprising:

8 attribute information adding means for adding  
9 information relating to job wait control and message  
10 information relating to the wait control to the job request as  
11 attribute information, and

12 ~~said scheduling device comprising:~~  
13 job information preparing means for preparing job  
14 information which specifies a received job;  
15 attribute information setting means for setting  
16 attribute information included in the received job in the job  
17 information;  
18 a queue for storing the prepared job information in  
19 order;  
20 control state setting means which, if wait control is  
21 set to the job information stored in said queue, renders a job  
22 associated with that job information in a wait control state  
23 when processing of that job is started or completed; and  
24 message information informing means which, when the job  
25 enters the wait control state, informs said terminal equipment  
26 of message information set with respect to that job.

1 7. A print processor which prints a document in  
2 response to a job request received through a network, said  
3 print processor comprising:  
4 job accepting means for accepting the job request;  
5 queuing means for storing the accepted jobs in  
6 sequential order;  
7 output means for printing a document specified by the  
8 job stored in said queuing means;  
9 converting means for converting the document into a  
10 format which said output means can interpret; and



11 conversion control means for causing said converting  
12 means to convert a document which needs to be converted when  
13 being printed by said output means,

14 wherein said converting means informs said conversion  
15 control means that it can carry out conversion when conversion  
16 processing becomes available, and

17 wherein said conversion control means retrieves a  
18 document in a format which said output means cannot interpret  
19 from among the documents specified by the job stored in said  
20 queuing means, and causes said converting means to convert the  
21 format of that document.

1 8. The print processor as defined in claim 7,  
2 wherein said job accepting means accepts a job request  
3 including information which means that information for  
4 specifying a document is transmitted in several divided parts,  
5 and information which specifies a document included in the job  
6 request,

7 wherein said queuing means comprises a spool queue for  
8 temporarily storing information which specifies a job and a  
9 document until information for specifying all documents  
10 included in the job is completely received, a printer queue  
11 corresponding to said output means, and queue managing means  
12 for moving information specifying a document and a job which  
13 has the complete information for specifying all of the  
14 documents from said spool queue to said printer queue, and

15            wherein said conversion control means retrieves  
16 documents in a format, which said output means cannot  
17 interpret, from said printer queue to said spool queue one  
18 after another, and causes said converting means to convert the  
19 format of those documents.

1            9.     A print processor which carries out printing upon  
2 receipt of a job processing request, including an instruction  
3 for processing print requests for a plurality of documents as  
4 one job and scheduling attributes, from a plurality of  
5 terminals through a network, said print processor comprising:  
6            timer means which, upon receipt of a job processing  
7 request from the terminal, checks whether or not a next print  
8 document was received within a predetermined period of time by  
9 monitoring a series of documents included in the job processing  
10 request;

11            scheduling attribute judging means which, upon receipt  
12 of the job processing request, judges whether the scheduling  
13 attributes are after-complete attributes which carry out  
14 scheduling in such a way that the execution of a job is started  
15 upon receipt of all print documents related to the job or  
16 before-complete attributes which carry out scheduling in such  
17 a way that a job is executed with respect to a received print  
18 document every time each print document is received;

19            final document processing means which, when said timer  
20 means has judged that the next print document could not be

21 received within a predetermined period of time during the  
22 reception of the job processing request, handles a print  
23 document which was received immediately before this judgement  
24 as a final document of the current job, if the scheduling  
25 attributes are the after-complete attributes; and

26 job completion processing means which, when said timer  
27 means has judged that the next print document could not be  
28 received within a predetermined period of time during the  
29 reception of the job processing request, completes the job by  
30 handling a print document which was received immediately before  
31 the judgement as the final document of the current job, if the  
32 scheduling attributes are the before-complete attributes.

10. The print processor as defined in claim 9,  
further comprising final document decision means for deciding  
the completion of the series of print documents upon receipt of  
the job processing request.

11. The print processor as defined in claim 10,  
further comprising printer selecting means which, if the  
scheduling attributes are the before-complete attributes,  
selects a printer when said final document judging means judges  
a received document to be the final print document in the case  
of the scheduling attributes of the after-complete type, and  
when said final document processing means deals the print  
document immediately before the judgement.

1           12. A print processing method for use in a print  
2 processor in the case where a receiving failure arises during  
3 receipt of a job processing request, which includes an  
4 instruction for processing print requests for a plurality of  
5 documents as one job and scheduling attributes, from a  
6 plurality of terminals through a network, said print processing  
7 method comprising the steps of: A

8           judging whether or not a next print document was  
9 received within a predetermined period of time by monitoring  
10 the time at which the next print document is received while a  
11 series of print documents included in the job processing  
12 request from the terminal are received;

13           judging, from the received job processing request,  
14 whether the scheduling attributes are after-complete attributes  
15 which carry out scheduling in such a way that the execution of  
16 a received job is started upon receipt of all print documents  
17 related to this job or before-complete attributes which carry  
18 out scheduling in such a way that a job is executed with  
19 respect to a received print document every time a print  
20 document is received;

21           executing a job by handling a print document received  
22 immediately before the judgement of the reception of the next  
23 print document as a final print document of this job when the  
24 next print document is not received within a predetermined  
25 period of time, if the scheduling attributes are the after-  
26 complete attributes; and

27 completing the job by dealing a print document received  
28 immediately before the judgement of the reception of the next  
29 print document as the final document of this job when the next  
30 print document is not received within a predetermined period of  
31 time, if the scheduling attributes are the before-complete  
32 attributes.

1 13. A job processing device which sequentially  
2 executes jobs for which processing requests were accepted, said  
3 job processing device comprising:

4 first queuing means for sequentially storing jobs for  
5 which processing requests were accepted;

6 second queuing means for sequentially storing jobs  
7 whose processing is to be interrupted from among the jobs  
8 stored in said first queuing means;

9 queue control means which moves the job stored in the  
10 first queuing means from said first queuing means to said  
11 second queuing means in response to a job processing  
12 interruption request and moves the jobs stored in said second  
13 queuing means from said second queuing means to said first  
14 queuing means in response to a job resumption request; and

15 job execution means for sequentially executing the jobs  
16 stored in said first queuing means.

1 14. The job processing device as defined in claim 13,  
2 further comprising job state control means which manages

3 interruption information, representing an interrupted state of  
4 a job, as attribute information of the job when the job being  
5 executed by said job execution means is interrupted in response  
6 to the job processing interruption request, wherein the  
7 execution of the job is resumed with reference to the  
8 interruption information in response to the job resumption  
9 request.

1 ~~15. A job scheduling device which sequentially stores~~  
2 ~~jobs, for which processing requests were received from~~  
3 ~~terminals, in a queue and sequentially processes the jobs held~~  
4 ~~in the queue using a job execution section, said job scheduling~~  
5 ~~device comprising:~~

6 a plurality of queues provided corresponding to states  
7 of the jobs;

8 scheduling means for scheduling the jobs using the  
9 plurality of queues; and

10 recovery means for recovering previous state of each of  
11 the jobs being held in the plurality of queues, at the time of  
12 recovery from a failure, if any failure occurred while the jobs  
13 are being scheduled by said scheduling means.

1 16. A job scheduling device for storing, in a queue,  
2 print jobs which include print data and attribute information  
3 and for which processing requests were received from terminals,  
4 and for sequentially printing the print jobs held in the queue

5 ~~based on the attribute information using a job execution~~  
6 section, said job scheduling device comprising:

7 a plurality of queues provided corresponding to print  
8 job states;

9 scheduling means for scheduling the print jobs using  
10 the plurality of queues; and

11 attribute modifying means for modifying the attribute  
12 information only when a print job can be changed at the time  
13 that an instruction for modifying the attribute information of  
14 the print job is received, and when the instruction is free  
15 ~~from errors.~~